To: Pete Kmet
From: Fu-Shin Lee
Cc: Craig McCormack, Kathryn DeJesus
Date: July 31, 2006
Subject: Comments to July 2006 MTCA Rule Amendments

This document was well prepared and organized to give readers good background information for MTCA rules, rule amendments, issues and options to solve the issues, and provide the wealth of useful information of historic and most current TEFs, and how various programs and agencies calculate cleanup TEQ.

Specific Edits were done in red text in the attached document: TEQ Background Document for MTCA Rule Amendments (July 2006), and specific comments are in the following section.

Specific Comments:

(1) Page 5, List of Abbreviations and Acronyms
Comment:
Recommend to add cPAHs and DLCs as listed below.

CDFs	Polychlorinated dibenzofurans
cPAHs	Carcinogenic polycyclic aromatic hydrocarbons
DLCs	Dioxin-like compounds
Ecology	Washington Department of Ecology

(2) Pages 11 and 12,
Comment:
Total Toxicity Equivalence (TEQ) was used in Figure 1 equation on Page 12, but total equivalency (TEQ) was used in the documents on Pages 11 and 12. Therefore I changed total equivalency to total equivalence in the documents on Pages 11 and 12 to be consistent with total toxicity equivalence used in Figure 1 equation.

(3) Page 18,
"(EPA, 2001b). The EPA Science Advisory Board also noted that five of the 30 dioxin-like compounds (17 PCDDs/PCDFs and 13 PCBs) considered by EPA account for over 70% of the TEQ in the human diet. The Board noted that the variability in relative potency factors for these five congeners is much lower than the variability in TEFs for congeners that are minor contributors to human exposure (EPA, 2001a)."

Comment:
I couldn't find citations EPA 2001a and EPA 2001b in the References section. Only EPA 2001, EPA 2003a and EPA 2003b are in the References.

30 dioxin-like compounds (17 PCDDs/PCDFs and 13 PCBs) based on WHO-1994 TEF, and 29 dioxin-like compounds (17 PCDDs/PCDFs and 12 PCBs) based on WHO-1998 TEF.

(4) Pages 27 and 28,
Comment:
Footnote 24 on Page 27 and footnote 27 on Page 28 are redundant.

(5) Page 29, Footnote 29,
"Ecology considers 16 PAH compounds when evaluating compliance with the Sediment Management Standards (Chapter 173-204 WAC). PAH concentrations were reported on a weight-weight basis (ug/kg wet weight or mg/kg dry weight) for each individual low and high molecular weight PAH and then added together to reflect the total concentration for low and high molecular weight PAHs . Low molecular weight PAHs, LPAH: naphthalene, 2-methylnaphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene; High molecular weight PAHs, HPAH: fluroanthene, pyrene, benzo(a)anthracene, chrysene, bewnzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,H)anthracene, benzo(ghi)perylene."

Comment:
Ecology considers 18PAH compounds when evaluating compliance with the Sediment Management Standards (Chapter 173-204 WAC). PAH concentrations were reported on a weight-weight basis (ug/kg dry weight or mg/kg TOC) for each individual low and high molecular weight PAH in sediment samples and then added together to reflect the total concentration for LPAH (excluding 2-mehtylnaphthalene) and HPAH. Low molecular weight PAHs, LPAH: naphthalene, 2-methylnaphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene; High molecular weight PAHs, HPAH: fluroanthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,H)anthracene, benzo(ghi)perylene.

(6) Page 21, Pages 38 - 40,
Comment:
The option 3 is recommended instead of option 2 on Page 38, since PCDDs, PCDFs and dioxin-like PCB congeners have similar chemical structures and the same mode of action for 2,3,7,8-TCDD toxicity. Mixtures of all dioxin-like compounds (17 dioxin/furan congeners identified in Table 1 and the 12 PCB congeners identified in Table 6) should be treated as a single hazardous substance when considering 2,3,7,8-TCDD toxicity with CSF of 150,000 per mg/kg-d. PCB mixtures should be treated as a single hazardous substance when considering non-dioxin-like PCB toxicity with CSF of 2 per mg/kg-d and RfD of 0.00002 mg/kg-d.

Dioxin/furan mixtures (17 dioxin/furan congeners identified in Table 1) should be treated as a single hazardous substance, if dioxin/furan congeners are analyzed and dioxin-like PCB congeners (12 PCB congeners identified in Table 6) are not analyzed.

Dioxin-like PCB congeners (12 PCB congeners identified in Table 6) should be treated as a single hazardous substance, if dioxin-like PCB congeners are analyzed and dioxin/furan congeners (17 dioxin/furan congeners identified in Table 1) are not analyzed.